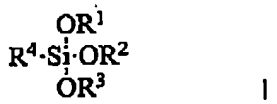
EXHIBIT B

1. (Previously amended) A method of preparing siliceous materials comprising combining an organic polyol silane precursor with one or more additives under conditions suitable for hydrolysis and condensation of the precursor to a siliceous material, wherein the one or more additives are selected from one or more water-soluble polymers and one or more trifunctional silanes of Formula I:



I

wherein OR^1, OR^2 and OR^3 are the same or different and represent a group that is hydrolyzed under normal sol-gel conditions to provide Si-OH groups; and R^4 is group that is not hydrolyzed under normal sol-gel conditions, wherein the conditions suitable for hydrolysis and condensation of the precursor to a siliceous material comprise combining the organic polyol silane precursor with the one or more additives at a pH in the range of about 4 to about 11.5.

2. (Original) The method according to claim 1, wherein the one or more additives are water soluble polymers selected from one or more of polyethers, polyalcohols, polysaccharides, poly(vinyl pyridine), polyacids, polyacrylamides and polyallylamine.

3. (Original) The method according to claim 2, wherein the one or more additives are water soluble polymers selected from one or more of polyethylene oxide (PEO), polyethylene glycol (PEG), amino-terminated polyethylene oxide (PEO-NH_2), amino-terminated polyethylene glycol (PEG-NH_2), polypropylene glycol (PPG), polypropylene oxide (PPO), polypropylene glycol bis(2-amino-propyl ether) (PPG-NH_2), polyvinyl alcohol, poly(acrylic acid), poly(vinyl pyridine), poly(N-isopropylacrylamide) (polyNIPAM) and polyallylamine (PAM).

4. (Original) The method according to claim 3, wherein the one or more additives are water soluble polymers selected from one or more of PEO, PEO-NH_2, PEG, PPG-NH_2, polyNIPAM and PAM.

5. (Original) The method according to claim 3, wherein the one or more additives are water soluble polymers selected from one or more of PEO, PEO-NH_2 and polyNIPAM.

6. (Original) The method according to claim 1, wherein the one or more additives is a mixture of water soluble polymers,

7. (Original) The method according to claim 6 wherein the mixture of water soluble polymers comprises PEO and PEO-NH_2.

8. (Original) The method according to claim 5, wherein the one or more additives is PEO.

9. (Original) The method according to claim 8, wherein the PEO has a molecular weight that is greater than about 10,000 g/mol.

10. (Original) The method according to claim 9, wherein the PEO is used at a concentration of greater than about 0.005 g/mL of final solution.

11. (Original) The method according to claim 5, wherein the one or more additives is PEO-NH_2.

12. (Original) The method according to claim 11, wherein the PEO-NH_2 has a molecular weight that is greater than about 3,000 g/mol and is used at a concentration of about 0.005 g/mL of final solution.

13. (Original) The method according to claim 5, wherein the one or more additives is poly(N-isopropylacrylamide).

14. (Original) The method according to claim 13, wherein the poly(N-isopropylacrylamide) has a molecular weight that is about 10,000 g/mol and is used at a concentration of about 0.005 g/mL of final solution.

15. (Original) The method according to claim 1, wherein the one or more additives is a compound of Formula I.

16. (Original) The method according to claim 15, wherein OR^1, OR^2 and OR^3 are the same or different and are derived from organic di- or polyols.

17. (Original) The method according to claim 16, wherein OR^1, OR^2 and OR^3 are the same or different and are derived from sugar alcohols, sugar acids, saccharides, oligosaccharides or polysaccharides.

18. (Previously amended) The method according to claim 16, wherein OR^1, OR^2 and OR^3 are the same or different and are derived from allose, altrose, glucose, mannose, gulose, idose, galactose, talose, ribose, arabinose, xylose, lyxose, threose, erythrose, glyceraldehydes, sorbose, fructose, dextrose, levulose, sorbitol, sucrose, maltose, cellobiose, lactose, dextran (500-50,000 MW), amylose, pectin, glycerol, propylene glycol or trimethylene glycol.

19. (Original) The method according to claim 18, wherein OR^1, OR^2 and OR^3 are the same or different and are derived from glycerol, sorbitol, maltose, trehalose, glucose, sucrose, amylose, pectin, lactose, fructose, dextrose and dextran.

20. (Original) The method according to claim 18, wherein OR^1, OR^2 and OR^3 are the same or different and are derived from glycerol, sorbitol, maltose or dextran.

21. (Original) The method according to claim 15, wherein OR^1, OR^2 and OR^3 are the same or different and are selected from C_{1-4}alkoxy, aryloxy and arylalkyleneoxy.

22. (Original) The method according to claim 21, wherein wherein OR^1, OR^2 and OR^3 are the same or different and are selected from C_{1-4}alkoxy, phenyoxy, naphthyloxy and benzyloxy.

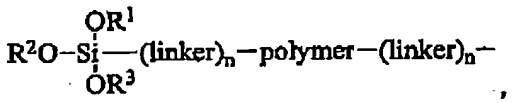
23. (Original) The method according to claim 22, wherein wherein OR^1, OR^2 and OR^3 are the same or different and are selected from C_{1-4}alkoxy.

24. (Original) The method according to claim 23, wherein OR^1, OR^2 and OR^3 are all ethoxy.

25. (Original) The method according to claim 15, wherein R^4 is selected from the group consisting of:

polyol-(linker)-;

polymer-(linker)$_n$-; and



wherein n is 0-1.

26. (Original) The method according to claim 25, wherein the polyol is an organic di- or polyol.

27. (Original) The method according to claim 26, wherein the polyol is selected from the group consisting of a sugar alcohol, sugar acid, saccharide, oligosaccharide and polysaccharide.

28. (Original) The method according to claim 27, wherein the polyol is a selected from the group consisting of allose, altrose, glucose, mannose, gulose, idose, galactose, talose, ribose, arabinose, xylose, lyxose, threose, erythrose, glyceraldehydes, sorbose, fructose, dextrose, levulose, sorbitol, sucrose, maltose, cellobiose, lactose. dextran, (500-50,000 MW), amylose, pectin, glycerol, propylene glycol and trimethylene glycol.

29. (Original) The method according to claim 28, wherein the polyol is selected from the group consisting of glycerol, sorbitol, maltose, trehalose, glucose, sucrose, amylose, pectin, lactose, fructose, dextrose and dextran.

30. (Previously amended) The method according to claim 29, wherein the polyol is selected from the group consisting of glycerol, sorbitol, glucose, maltose and dextrose.

31. (Original) The method according to claim 25 wherein the polymer is a water soluble polymer.

32. (Original) The method according to claim 31, wherein the polymer is selected from the group consisting of polyethylene oxide (PEO), polyethylene glycol (PEG), amino-terminated polyethylene oxide (PEO-NH_2), amino-terminated polyethylene glycol (PEG-NH_2), polypropylene glycol (PPG), polypropylene oxide (PPO), polypropylene glycol bis(2-amino-propyl ether) (PPG-NH_2), polyvinyl alcohol, poly(acrylic acid), poly(vinyl pyridine), poly(N-isopropylacrylamide) (polyNIPAM) and polyallylamine (PAM).

33. (Original) The method according to claim 32, wherein the water soluble polymer is selected from the group consisting of PEO, PEO-NH_2, PEG, PPG-NH_2, polyNIPAM and PAM.

34. (Original) The method according to claim 33, wherein the polymer is PEO.

35. (Original) The method according to claim 25, wherein the linker is selected from the group consisting of $C_{1\text{-}20}$alkylene, $C_{1\text{-}20}$alkenylene, organic ethers, thioethers, amines, esters, amides, urethanes, carbonates and ureas.

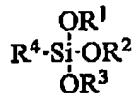
36. (Original) The method according to claim 25, wherein the compound of Formula I is selected from one or more of:
GluconamideSi (Compound **1**);
MaltonamideSi (Compound **2**);
DextronamideSi (Compound **3**);
$(CH_2CH_2O)_p[(EtO)_3Si(C_3H_6)]_2$, p ~4-5, average MW 200 (Compound **5a**);
$(CH_2CH_2O)_p[(EtO)_3Si(C_3H_6)]_2$, p ~13, average MW 600 (Compound **5b**);
$(CH_2CH_2O)_p[(EtO)_3Si(C_3H_6)]_2$, p ~44, average MW 2000 (Compound **5c**); and
$(CH_2CH_2O)_p[(EtO)_3Si(C_3H_6)]_2$, p ~227, average MW 10,000 (Compound **5d**).

37. (Original) The method according to claim 1, wherein the organic polyol silane precursor is selected from the group consisting of diglycerylsilane (DGS), monosorbitylsilane (MSS), monomaltosylsilane (MMS), dimaltosylsilane (DMS) and dextran-based silane (DS).

38. (Currently Amended) The method according to claim 1, wherein the conditions suitable for the hydrolysis and condensation of the precursor to a siliceous material ~~include a pH in the range of about 4-11.5~~ comprise combining the organic polyol silane precursor with the one or more additives in aqueous solutions and with optional sonication to assist in dissolution.

39. (Currently amended) A method of preparing siliceous materials with low shrinkage characteristics comprising:

(a) combining an aqueous solution of one or more compounds of Formula I:



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wherein OR^1, OR^2 and OR^3 are the same or different and represent a group that is hydrolyzed under normal sol-gel conditions to provide Si-OH groups; and R^4 is group that is not hydrolyzed under normal sol-gel conditions, with an aqueous solution of an organic polyol silane precursor;

(b) adjusting the pH of the solution in (a) to about 4-11.5;

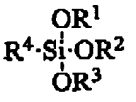
(c) allowing the solution of (b) to gel;

(d) aging the gel of (c); and

(e) drying the aged gel in air.

40. (Original) A siliceous material prepared using the method according to claim 1.

41. (Currently amended) A method of preparing monolithic silica materials comprising combining an organic polyol silane precursor with one or more additives selected from one or more water-soluble polymers and one or more compounds of Formula I:



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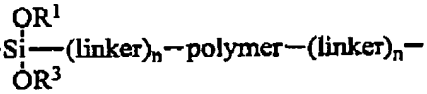
wherein OR^1, OR^2 and OR^3 are the same or different and represent a group that is hydrolyzed under normal sol-gel conditions to provide Si-OH groups, R^4 is group selected from polymer-(linker)$_n$- and  and n = 0-1, under conditions where a phase transition occurs before gelation, wherein the conditions where a phase transition occurs before gelation comprise combining the

organic polyol silane precursor with the one or more additives at a pH in the range of about 4 to about 11.5.

42. (Original) The method according to claim 41, wherein R^4 is

$$R^2O-\underset{\underset{OR^3}{|}}{\overset{OR^1}{|}}{Si}-(linker)_n-polymer-(linker)_n-$$

43. (Original) The method according to claim 42, wherein the linker group is a C_{1-4}alkylene group and n is 1.

44. (Original) The method according to claim 42, wherein OR^1, OR^2 and OR^3 are the same and are selected from C_{1-4}alkoxy.

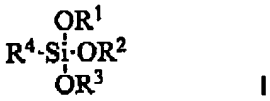
45. (Original) The method according to claim 42, wherein the polymer is PEO.

46. (Original) The method according to claim 41 wherein the compound of Formula I is selected from the group consisting of:
$(CH_2CH_2O)_p[(EtO)_3Si(C_3H_6)]_2$, p ~4-5, average MW 200 (Compound **5a**);
$(CH_2CH_2O)_p[(EtO)_3Si(C_3H_6)]_2$, p ~13, average MW 600 (Compound **5b**);
$(CH_2CH_2O)_p[(EtO)_3Si(C_3H_6)]_2$, p ~44, average MW 2000 (Compound **5c**); and
$(CH_2CH_2O)_p[(EtO)_3Si(C_3H_6)]_2$, p ~227, average MW 10,000 (Compound **5d**).

47. (Original) The method according to claim 41, wherein the water soluble polymer is selected from one or more of PEO, PEO-NH_2 and poly(NIPAM).

48. (Original) A meso/macroporous silica monolith prepared using the method according to claim 41.

49. (Currently amended) A method of preparing siliceous materials comprising combining an organic polyol silane precursor, a biomolecule of interest and one or more additives under conditions suitable for the hydrolysis and condensation of the precursor to a siliceous material, wherein the one or more additives are selected from one or more water-soluble polymers and one or more trifunctional silanes of Formula I:



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wherein OR^1, OR^2 and OR^3 are the same or different and represent a group that is hydrolyzed under normal sol-gel conditions to provide a Si-OH group; and R^4 is group that is not hydrolyzed under normal sol-gel conditions, wherein the conditions suitable for hydrolysis and condensation of the precursor to a siliceous material comprise combining the organic polyol silane precursor, biomolecule and one or more additives at a pH in the range of about 4 to about 11.5.

50. (Original) A siliceous material comprising a biomolecule entrapped therein prepared using the method according to claim 49.

51. (Previously amended) A method for the quantitative or qualitative detection of a test substance that reacts with, binds to and/or whose reactivity is catalyzed by an active biological substance, wherein said biological substance is encapsulated within a siliceous material, comprising:

(a) preparing the siliceous material comprising said active biological substance entrapped within a porous, silica matrix using a method according to claim 49;

(b) bringing said biological-substance-containing siliceous material into contact with a gas or aqueous solution comprising the test substance; and

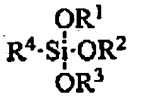
(c) quantitatively or qualitatively detecting, observing or measuring the change in one or more characteristics in the biological substance entrapped within the siliceous

material and/or, alternatively, quantitatively or qualitatively detecting, observing or measuring the change in one or more characteristics in the test substance.

52. (Original) The method according to claim 51, wherein the change in one or more characteristics of the entrapped biological substance is qualitatively or quantitatively measured by spectroscopy, utilizing one or more techniques selected from UV, IR, visible light, fluorescence, luminescence, absorption, emission, excitation and reflection.

53. (Original) A method of storing a biologically active biological substance in a silica matrix, wherein the biological substance is an active protein or active protein fragment, wherein the silica matrix prepared using a method according to claim 49.

54. (Currently amended) A method of preparing a monolithic silica chromatographic column comprising placing a solution comprising an organic polyol silane precursor and one or more additives selected from one or more water-soluble polymers and one or more compounds of Formula I:



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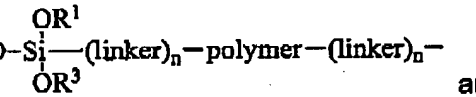
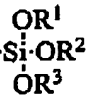
wherein OR^1, OR^2 and OR^3 are the same or different and represent a group that is hydrolyzed under normal sol-gel conditions to provide a Si-OH group; R^4 is group



selected from polymer-(linker)$_n$- and and n = 0-1, in a column under conditions suitable for a phase transition to occur before gelation, wherein the conditions suitable for a phase transition to occur before gelation comprise combining the organic polyol silane precursor with the one or more additives at a pH in the range of about 4 to about 11.5.

55. (Previously amended) The method according to claim 54, wherein the solution further comprises one or more substances, which provide cationic sites that counterbalance an anionic charge of the silica to reduce non-selective interactions

56. (Currently amended) A chromatographic column comprising a silica monolith prepared by combining an organic polyol silane precursor and one or more additives selected from one or more water-soluble polymers and one or more compounds of Formula I:



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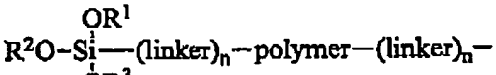
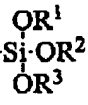
wherein OR^1, OR^2 and OR^3 are the same or different and represent a group that is hydrolyzed under normal sol-gel conditions to provide Si-OH groups; R^4 is group selected from polymer-(linker)$_n$- and  and n = 0-1, under conditions where a phase transition occurs before gelation, wherein the conditions suitable for a phase transition to occur before gelation comprise combining the organic polyol silane precursor with the one or more additives at a pH in the range of about 4 to about 11.5.

57. (Currently amended) A method of preparing a monolithic silica column having an active biomolecule entrapped therein comprising combining:

a) a polyol-silane derived silica precursor;

b) one or more additives selected from one or more water soluble polymers and one or more compounds of Formula I:



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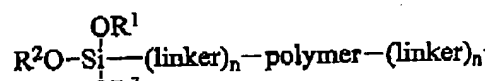
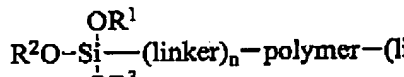
wherein OR^1, OR^2 and OR^3 are the same or different and represent a group that is hydrolyzed under normal sol-gel conditions to provide Si-OH groups, R^4 is group

selected from polymer-(linker)$_n$- and  and n is 0-1; and

c) a biomolecule;

under conditions wherein a phase separation occurs before gelation, wherein the conditions suitable for a phase transition to occur before gelation comprise combining the organic polyol silane precursor with the one or more additives at a pH in the range of about 4 to about 11.5..

58. (Original) The method according to claim 57, wherein the one or more additives is one or more water soluble polymers or one or more compounds of Formula I, wherein R^4 is 

59. (Previously amended) The method according to claim 57, wherein the organic polyol silane silica precursor, one or more additives and biomolecules are also combined with a substance which provides cationic sites that counterbalance an anionic charge of the silica to reduce non-selective interactions.

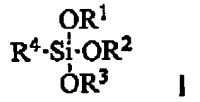
60. (Original) A chromatographic column prepared using a method according to claim 57.

61. (Original) A method of performing immunoaffinity chromatography, sample cleanup, solid phase extraction or preconcentration of analytes, removal of unwanted contaminants, solid phase catalysis or frontal affinity chromatography comprising:

(a) applying a sample to a column according to claim 60: and

(b) performing immunoaffinity chromatography, sample cleanup, solid phase extraction or preconcentration of analytes, removal of unwanted contaminants, solid phase catalysis or frontal affinity chromatography.

62. (Previously amended) A method of preparing siliceous materials with enhanced protein stabilizing ability comprising combining an organic polyol silane precursor with one or more additives under conditions suitable for hydrolysis and condensation of precursor to a siliceous material, wherein the one or more additives is selected from one or more trifunctional silanes of Formula I:



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wherein wherein OR^1, OR^2 and OR^3 are the same or different and represent a group that is hydrolyzed under normal sol-gel conditions to provide a Si-OH group and R^4 is polyol-(linker)-.

63. (Previously amended) The method according to claim 62, wherein the polyol in R^4 is derived from sugar alcohols, sugar acids, saccharides, oligosaccharides or polysaccharides.

64. (Original) The method according to claim 63, wherein the polyol in R^4 is derived from allose, altrose, glucose, mannose, gulose, idose, galactose, talose, ribose, arabinose, xylose, lyxose, threose, erythrose, glyceraldehydes, sorbose, fructose, dextrose, levulose, sorbitol, sucrose, maltose, cellobiose, lactose, dextran (500-50,000 MW), amylose, pectin, glycerol, propylene glycol or trimethylene glycol.

65. (Original) The method according to claim 64, wherein the polyol in R^4 is derived from glycerol, sorbitol, maltose, trehalose, glucose, sucrose, amylose, pectin, lactose, fructose, dextrose ort dextran.

66. (Original) The method according to claim 65, wherein the polyol in R^4 is derived from glycerol, sorbitol, glucose, maltose or dextran.

67. (Original) The method according to claim 66, wherein the polyol in R^4 is derived from glucose or maltose.

68. (Previously amended) The method according to claim 62 wherein the one or more additives is GluconamideSi (Compound **1**) and/or MaltonamideSi (Compound **2**).

69. (Original) The method according to claim 62, wherein the protein is a kinase, luciferase, or urease or is Factor Xa.

70. (Original) The method according to claim 69, wherein the protein is Src protein tyrosine kinase.

71. (Original) The method according to claim 62, further comprising combining the organic polyol silane precursor and one or more additives with a substrate for the protein to be entrapped.

72. (Original) The method according to claim 71, wherein the protein is a kinase and the substrate is a source of phosphate.

73. (Original) The method according to claim 72, wherein the substrate is ATP.

74. (Previously added) The method according to claim 59, wherein the substance which provides cationic sites that counterbalance an anionic charge of the silica to reduce non-selective interactions is aminopropyltriethoxysilane (APTES), PAM, PPG-NH_2 and/or PEG-NH_2.

EXHIBIT C

Evidence is provided below to demonstrate that DGS ≠ TEOS; DGS ≠ TEOS + glycerol; DGS ≠ PGS; DGS ≠ PGS + glycerol. In all cases, a head-to-head experiment was run using PEO of 10K MW. The experimental procedures are shown below.

As can be seen from the attached scanning electron microscopy (SEM) pictures, the DGS samples 1, 5, 6 exhibit macroporosity and (not shown) mesoporosity. The morphology of the structures varies, but is in all cases open. Sample 2 is not macroporous. Under these conditions, the gelation occured prior to phase separation. In order to slow down gelation, one equivalent of glycerol was added while other conditions were kept constant. The retarded hydrolysis rate led phase separation occurring *prior* to gelation and a macroporous structure was achieved (sample 6). To more broadly show the effect of changing the rate, 1 equiv. of glycerol was added to all of DGS, TEOS and PGS systems (samples 5, 6, 7, 8 11 and 12). As can be clearly seen, under these conditions only DGS at either pH 5.5 or pH 11 led to macroporous structures, while TEOS and PGS did not.

The SEM pictures of TEOS derived silica show that macroporous structures are not formed: with glycerol present, a 2 phase system results that does not cure within 1 day.

PGS does not lead to macroporous silica, irrespective of the presence of glycerol.

Procedure: Sample 1: **DGS** (1.00 g, 4.71 mmol) was dissolved in H_20 (1000 µL) at 0 °C with sonication for 20 min. An aqueous solution of HEPES buffer (1000 µL) at 50 mM, pH 5.5 (sample 1) (or pH 11 (sample 2)) containing 16% PEO (MW=10,000) (w/v) was added and mixed. The mixture was allowed to stand at room temperature to gel. Phase separation and gelation occurred after 2 min (sample 1) and 3 min (sample 2), respectively, to give an opaque hydrogel. The gel was aged at 4 °C overnight, followed by aging at room temperature for 2 days. After washing with H_2O (each time 10 mL x 5 times), and drying in air at room temperature for 1 week, an opaque xerogel was obtained. Samples 2 (pH 11), 5 and 6 were prepared similar to sample 1, reaction conditions are listed in Table 1. For 5 and 6, 1 equivalent of glycerol (to DGS) was added to DGS aqueous solution.

Sample 3: **TEOS** (0.98 g, 4.71 mmol) was mixed with H_2O (1000 µL) and sonicated at 0 °C for 20 min. An aqueous solution of HEPES buffer (1000 µL) at 50 mM, pH 5.5 (sample 3, pH 11, sample 4) containing 16% PEO (MW=10,000) (w/v) was added and stirred at room temperature for another 20 min. The mixture was allowed to stand at room temperature for 30 min, two solution layers formed and after 1 day there was a small amount of white solid precipitate which was collected by centrifugation, washed with H_2O and dried in air. Samples 4, 7 and 8 were prepared similar to sample 1, reaction conditions are listed in Table 1. For 7 and 8, 1 equivalent of glycerol (to TEOS) was added. In sample 4, a very small amount of white precipitate formed in the interface of two layers after standing at room temperature for 1 day, which was collected by centrifugation, washed with H_2O and dried in air.

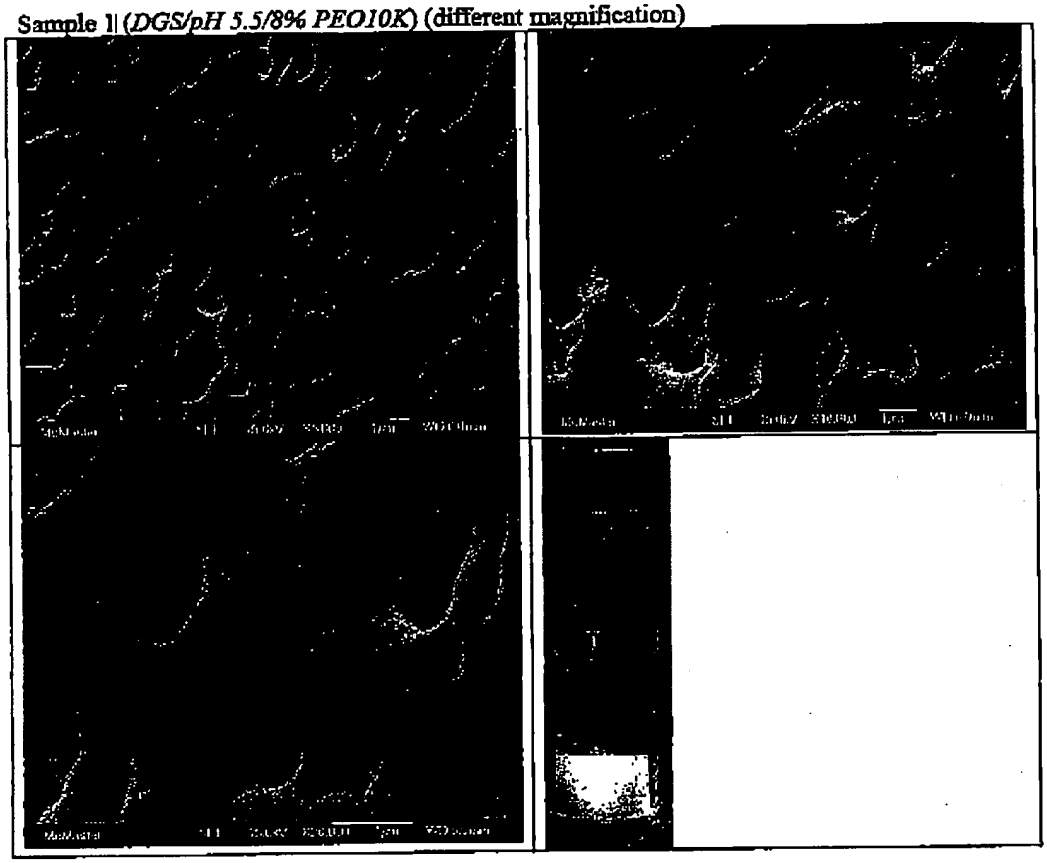
Samples **9** and **10**: **PGS** was prepared according to the literature (Gill, J. Am. Chem. Soc. 1998, 120, 8587-8598). It was found that PGS is not fully soluble in H_2O. The mixture of PGS (5.00 g) and H_2O (5000 µL) was sonicated at 0 °C for 20 min, and filtered; an insoluble solid (1.17 g) remained. In order to keep the ratio of Si:H_2O:PEO consistent with the DGS and TEOS system, to the filtrate was added H_2O (1420 µL). Thus, this prehydrolyzed PGS solution contained 0.6 g (4.71) mmol of PGS in 1000 µL H_2O. Sample **9** and **10** then were prepared similar to sample **1** and **2**, reaction conditions are listed in Table 1. For **11** and **12**, 1 equivalent of glycerol (to PGS) was added to the PGS aqueous solution.

Table 1. Reaction condition for preparation of silica monolith.

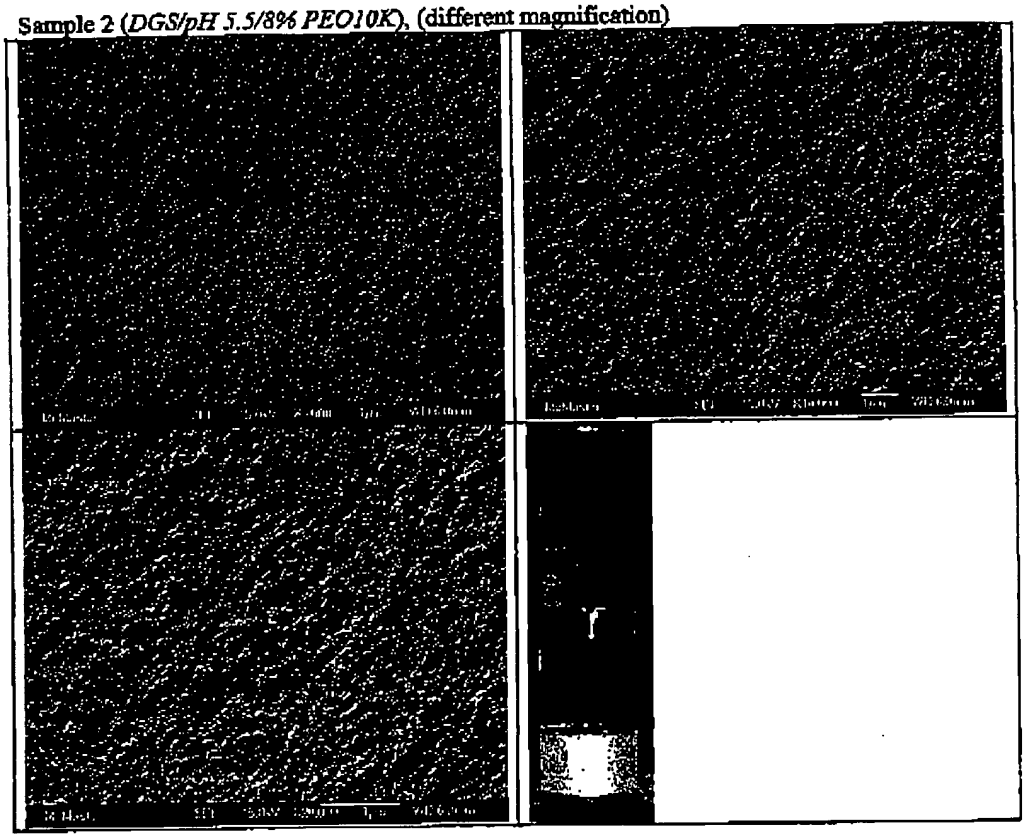
Sample	DGS, g (mmol)	TEOS, g (mmol)	PGS G(mmol)	Additional glycerol g(mmol)	HEPES buffer (original 50mM), containing 16% w/v, PEO-10K	
					pH 5.5	pH 11
1	1.00 (4.71)				1 mL	
2	1.00 (4.71)					1 mL
3		0.98 (4.71)			1 mL	
4		0.98 (4.71)				1 mL
5	1.00 (4.71)			0.433(4.71)	1 mL	
6	1.00 (4.71)			0.433(4.71)		1 mL
7		0.98 (4.71)		0.433(4.71)	1 mL	
8		0.98 (4.71)		0.433(4.71)		1 mL
9			0.60 (4.71)		1 mL	
10			0.60 (4.71)			1 mL
11			0.60 (4.71)	0.433(4.71)	1 mL	
12			0.60 (4.71)	0.433(4.71)		1 mL

SEM images

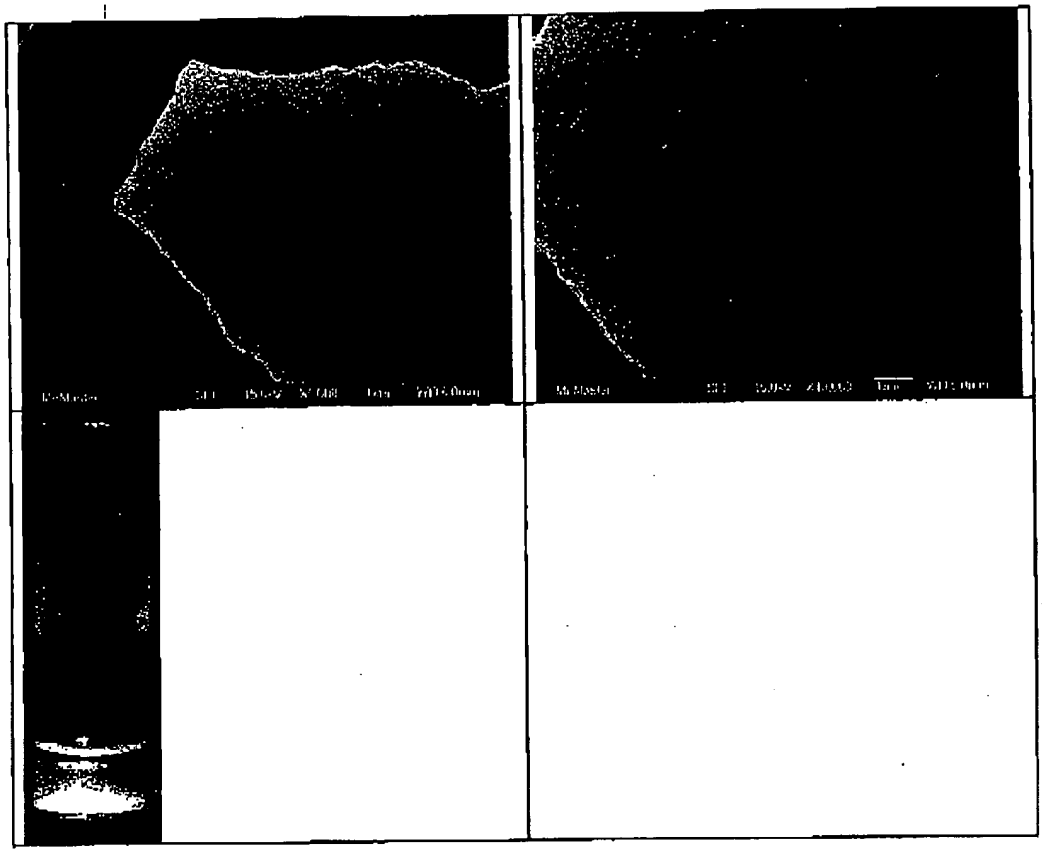
Sample 1| (*DGS/pH 5.5/8% PEO10K*) (different magnification)



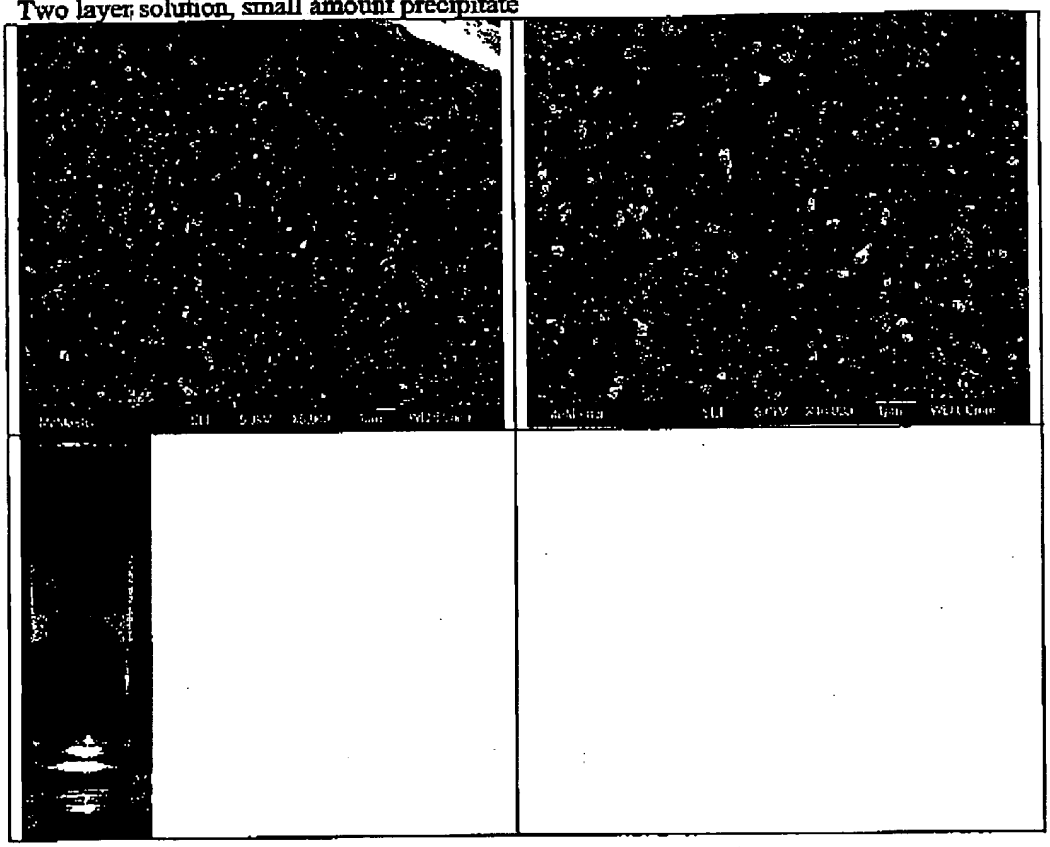
Sample 2 (*DGS/pH 5.5/8% PEO10K*), (different magnification)



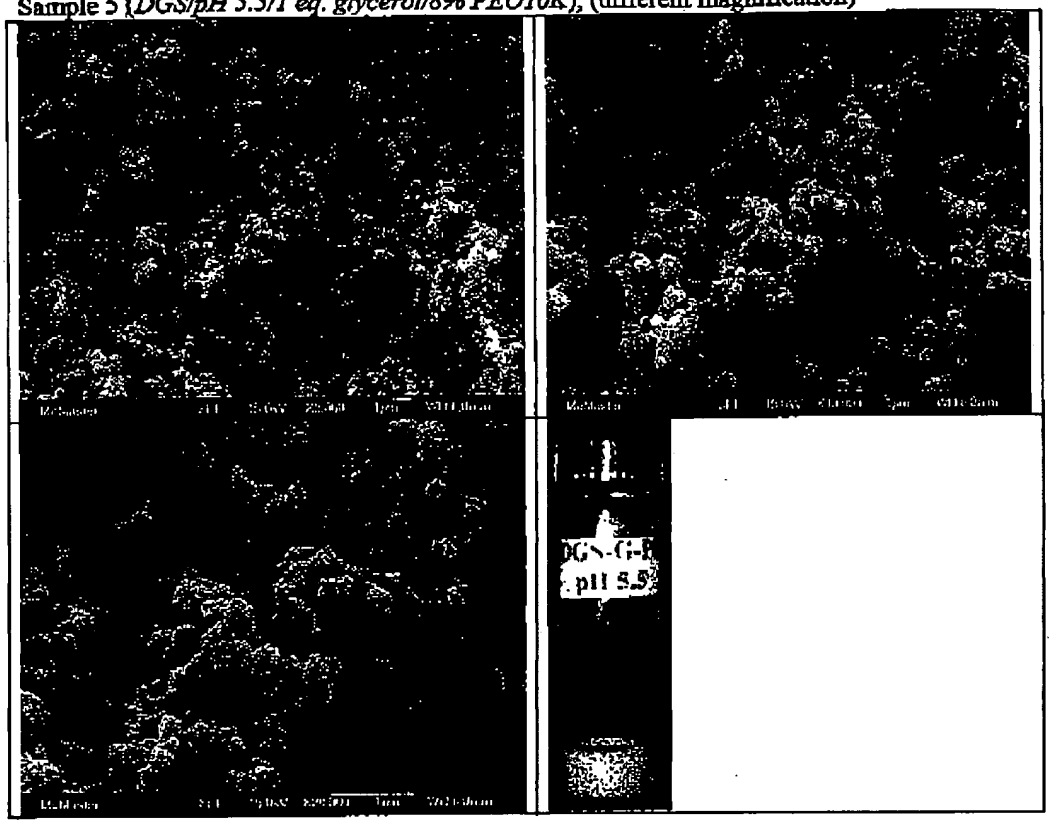
Sample 3 (*TEOS/pH 5.5/8% PEO10K*), (different magnification)
Two layer solution, small amount precipitate



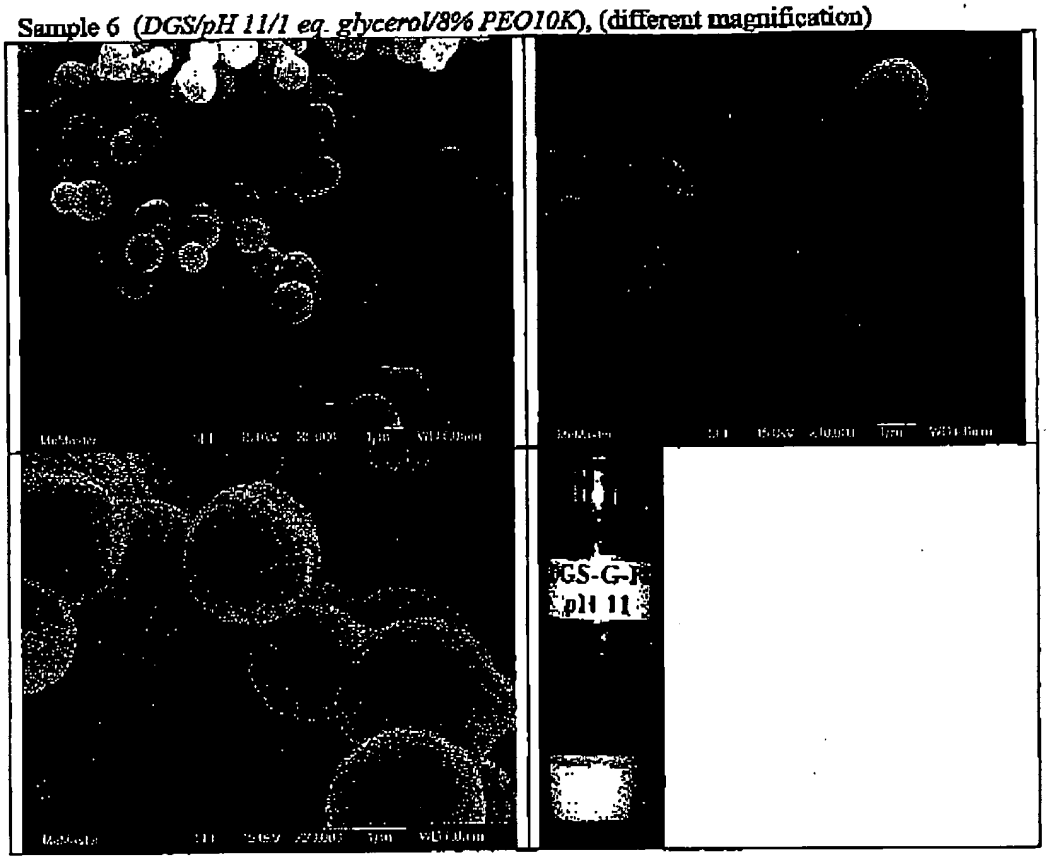
Sample 4 (*TEOS/pH 11/8% PEO10K*), (different magnification)
Two layer solution, small amount precipitate



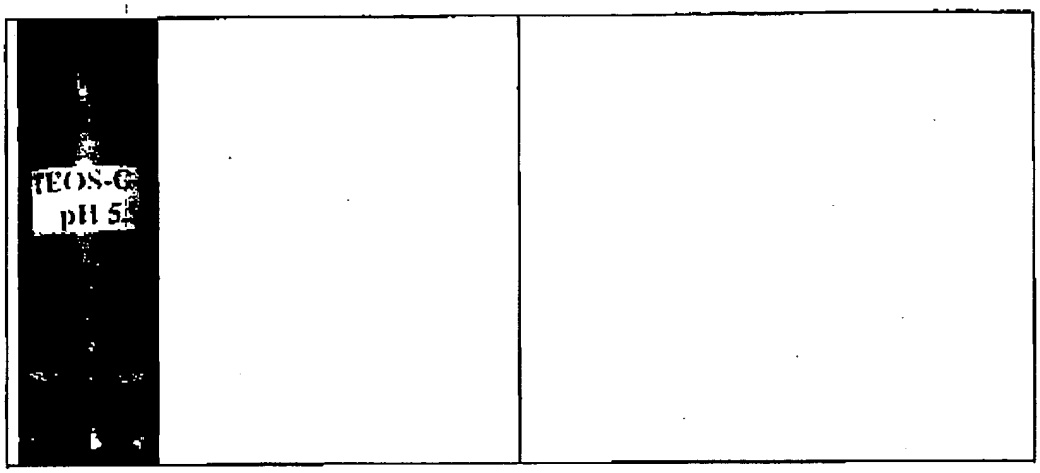
Sample 5 (*DGS/pH 5.5/1 eq. glycerol/8% PEO10K*), (different magnification)



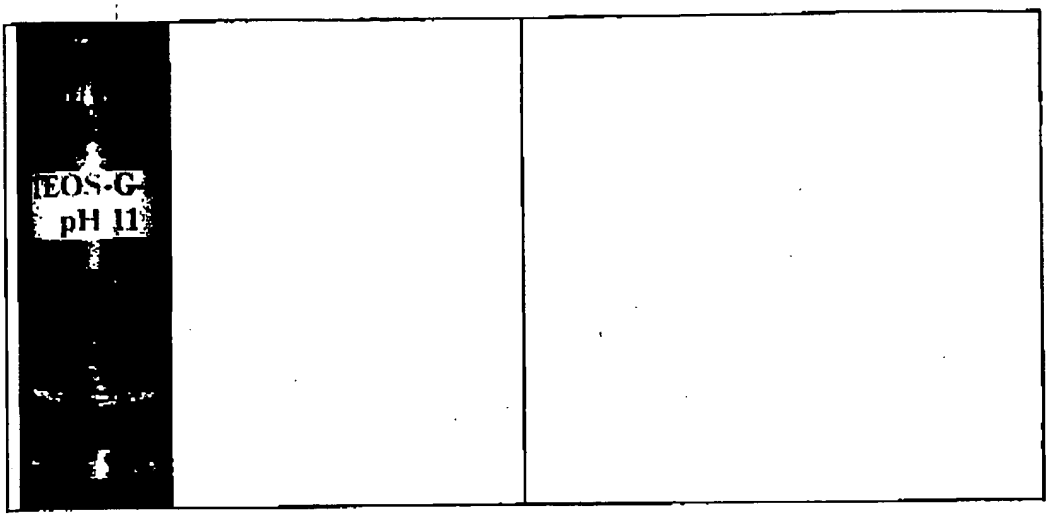
Sample 6 (*DGS/pH 11/1 eq. glycerol/8% PEO10K*), (different magnification)



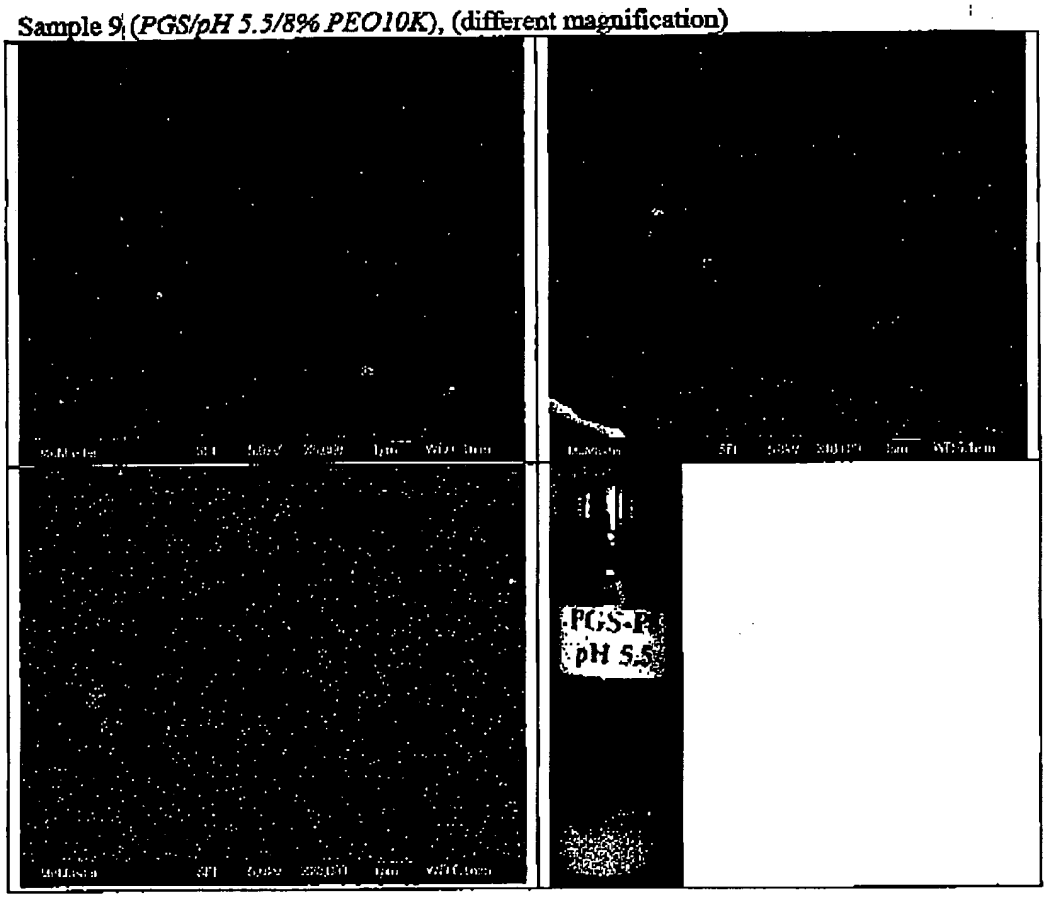
Sample 7 (*TEOS/pH 5.5/1 eq. glycerol/8% PEO10K*), Two layer solution, SEM is not available



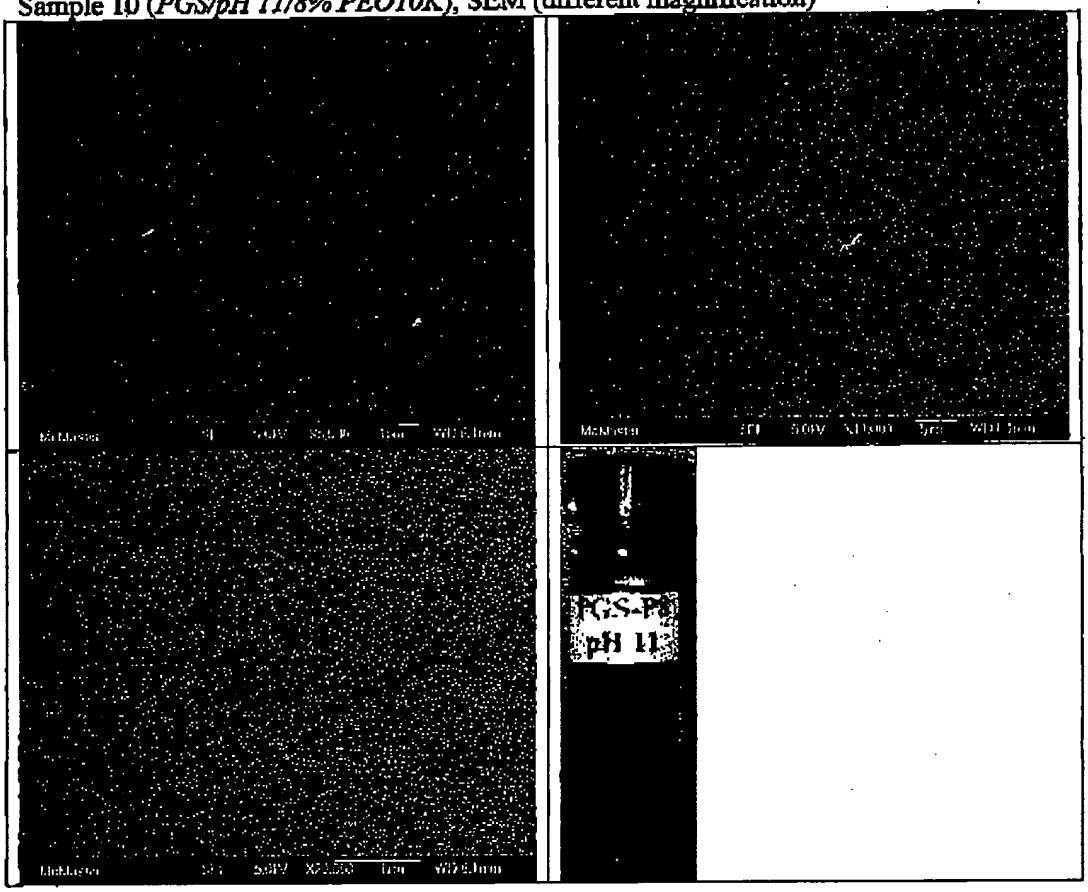
Sample 8 (*TEOS/pH 11/1 eq. glycerol/8% PEO10K*)
Two layer solution, SEM not available



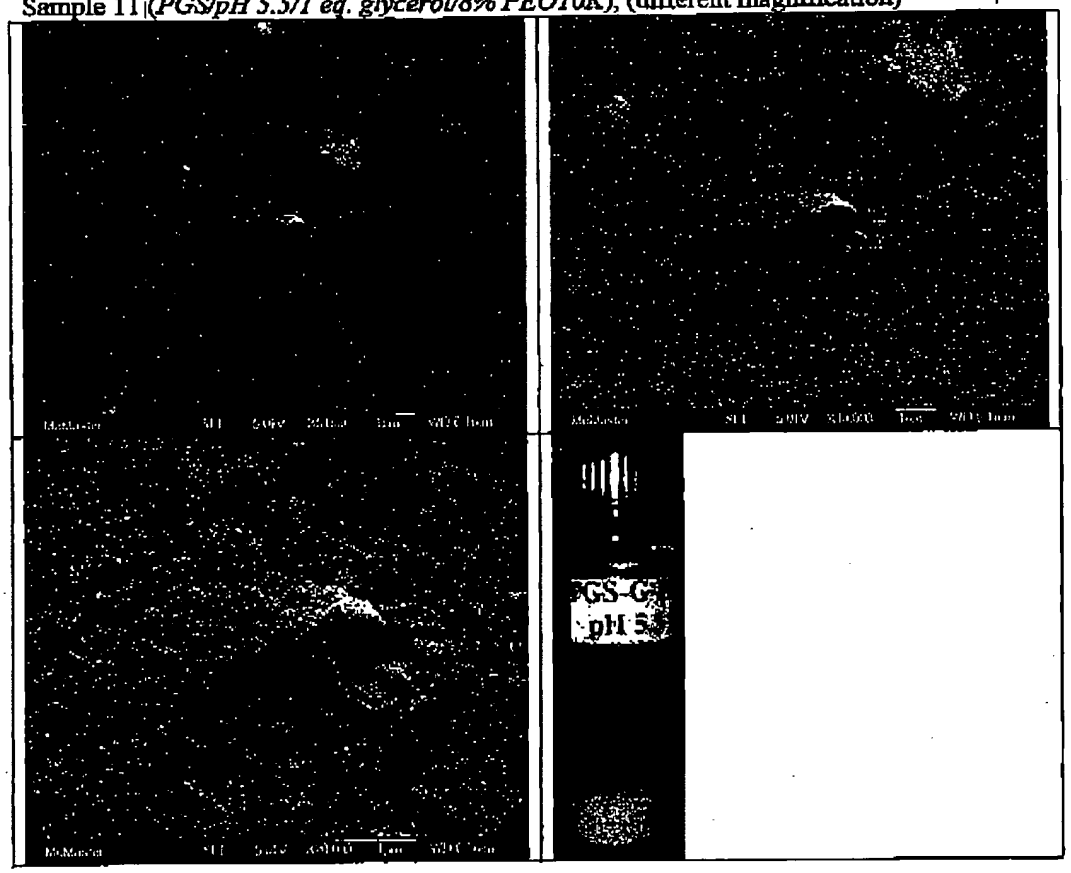
Sample 9 (*PGS/pH 5.5/8% PEO10K*), (different magnification)



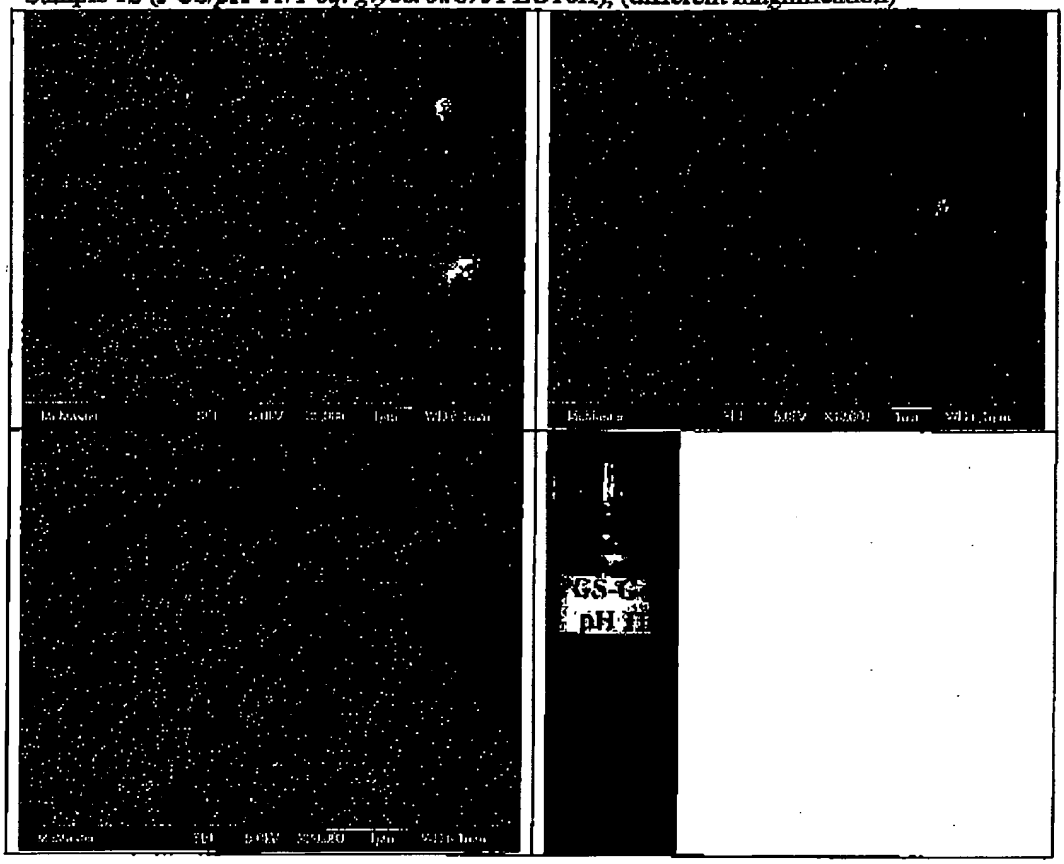
Sample 10 (*PGS/pH 11/8% PEO10K*), SEM (different magnification)



Sample 11 (*PGS/pH 5.5/1 eq. glycerol/8% PEO10K*), (different magnification)



Sample 12 (*PGS/pH 11/1 eq. glycerol/8% PEO10K*), (different magnification)



35. F. D. Bayles and M. A. Brook, *α and β-Silyl Carbenium Ions*, 28th Organosilicon Symposium, Gainsville, Florida, April 1995, Abstract P-7.
34. R. Ruffolo, M. A. Brook and M. J. McGlinchey, *Towards the stabilization of silenes on bimetallic clusters*, 28th Organosilicon Symposium, Gainsville, Florida, April 1995, Abstract P-9.
33. D. A. Valentini, M. A. Brook, V. Bartzoka and Mark R. McDermott, *Approaches to Grafting Silicones to Cellulose and Starch, 28th Organosilicon Symposium*, Gainsville, Florida, April 1995, Abstract P-10.
32. C. Le Roux, H. Yang, S. Wenzel and M. A. Brook, *Using "Anhydrous" Hydrolysis to Favor Formation of Hexamethylcyclotrisiloxane from Dimethyldichlorosilane*, 28th Organosilicon Symposium, Gainsville, Florida, April 1995, Abstract B-18.
31. V. Bartzoka, M. A. Brook, D. Valentini and Mark R. McDermott *Surface Interactions Between Proteins and Silicon Polymers: Physical and Covalent Adhesion*, 28th Organosilicon Symposium, Gainsville, Florida, April 1995, Abstract P-6.
30. M.A. Brook and T. Stefanac, *Silane Radical Polymerization Initiators; Functionalized Homopolymers and Block Copolymers*, IIIrd International Symposium on Radical Copolymers, Lyon, France, April 1994, Abstract P-52.
29. H. Ketelson, R.H. Pelton and M.A. Brook, *Polyolefin and Silicone Sterically Stabilized Colloids*, IIIrd International Symposium on Radical Copolymers, Lyon, France, April 1994, Abstract, Abstract 148.
28. M.A. Brook and T. Stefanac, *Silane Radical Polymerization Initiators; Functionalized Homopolymers and Block Copolymers*, XXVII Organosilicon Symposium, Troy, New York, March 1994, Abstract B-29.
27. M.A. Brook, G. McGibbon and C. Roos, *Towards Silanones, XXVII Organosilicon Symposium*, Troy, New York, March 1994, Abstract P-54.
26. R. Ruffolo, L. Girard, H. Gupta, A. Decken, M.A. Brook and M.J. McGlinchey, *Towards Metal Stabilized Silicon Cations*, XXVII Organosilicon Symposium, Troy, New York, March 1994, Abstract P-57.
25. M.A. Brook and M. Roth, *The substitution of Electrophiles in Polymeric Systems: Surprisingly Unreactive Vinylsilanes*, XXVII Organosilicon Symposium, Troy, New York, March 1994, Abstract P-55.
24. H. Ketelson, M.A. Brook and R.H. Pelton, *Post-Grafting Silicone Polymers to Vinyl Modified Colloidal Silica Spheres: Switching from an Electrostatically Stabilized Dispersion to a Sterically Stabilized Dispersion*, XXVII Organosilicon Symposium, Troy, New York, March 1994, Abstract P-30.
23. J.M. Dickson, M.A. Brook, C.K. Yeom, J. Jiang, H.K. Gupta, K. Rilling and B.J. Trushinski, *Development of crosslinked oligosilystyrene pervaporation membranes for the removal of chlorohydrocarbons from water*, International Congress on Membranes and Membrane Processes, (ICOM-93), Heidelberg, Germany, Sept. 1993, Abstract 5.11.
22. Jianxiong Jiang and Michael A. Brook, *The Redistribution Reactions Between Cyclic Silicones and Trichlorosilanes*, Canadian Society for Chemistry Conference, Sherbrooke, June 1993, Abstract 540 IN E3.

21. Courtney Henry and Michael A. Brook, *Electrophilic Addition Reactions Involving Organosilane π-Nucleophiles*, Canadian Society for Chemistry Conference, Sherbrooke, June 1993, Abstract 139 IN BSP.
20. M. A. Brook, *The β-effect: Modifying the Ligands on Silicon for Synthetic Control*, OMCOS 6, Utrecht, The Netherlands, August 1991, Abstract A-70.
19. G. A. McGibbbon, M. A. Brook and J. K. Terlouw, *Investigation of β-Silicon Vinyl Carbenium Ions in the Gas Phase*, Canadian Chemical Conference, Hamilton, June 1991, Abstract 857P.
18. C. Dallaire and M. A. Brook, *The Relative Magnitude of the β-effect of Silyl, Germyl and Stannyl Groups in the Stabilization of Vinyl Cations*, Canadian Chemical Conference, Hamilton, June 1991, Abstract 702P.
17. C. Henry, R. Jueschke and M. A. Brook, *Stereocontrolled Addition Reactions fo Carbon Electrophiles to Styrylsilanes*, Canadian Chemical Conference, Hamilton, June 1991, Abstract 700P.
16. P. Modi, M. A. Brook and J.D. Dickson, *Silicon Functionalized Styrene Polymers: Cationic Control with the β-effect*, Canadian Chemical Conference, Hamilton, June 1991, Abstract 461P.
15. M. A. Brook, D.K. Chau and W. Yu, *Electrophilic Cleavage Reactions of Alkoxyhydrosilanes: The Special Case of Tartaric Acid*, XXIV Organosilicon Symposium, El Paso, April 1991, Abstract 99.
14. R. H. Pelton, A. Osterroth and M. A. Brook, *Steric Stabilization of Colloidal Particles*, 73rd Canadian Chemical Conference, Halifax, July 1990, Abstract 741.
13. C. Dallaire and M. A. Brook, *Study of the Stabilization of Vinyl Cations (β-effect) by Group 14 Metals*, IX International Symposium on Organosilicon Chemistry, Edinburgh, Scotland, July 1990, Abstract 4.8.
12. M. A. Brook, R. Jueschke, W. Yu and A. Neuy, *Electrophilic Addition Reactions of β-Silylstyrenes: The Pursuit of a Stable β-Silyl Carbocation*, IX International Symposium on Organosilicon Chemistry, Edinburgh, Scotland, July 1990, Abstract 4.7.
11. Michael A. Brook and S. Müller, *The β-effect in Silyl Enol Ether Reactions: Trapping the Intermediate Siloxy Carbonium Ion*, XXIII Organosilicon Symposium, Midland, Michigan, April 1990, Abstract B4.
10. Michael A. Brook, *The β-effect: Changing the Ligands on Silicon*, 17th Annual Ontario-Quebec Physical Organic Minisymposium, Quebec, Nov. 1989.
9. Michael A. Brook, Peter Hülser and Thomas Sebastian, *Oligotrichlorosilylstyrenes: Highly Functionalized Silicone Precursors*, 25th Canadian High Polymer Symposium, Mississauga, Canada, Aug. 23-25, 1989.
8. Michael A. Brook, Mahmud A. Hadi and Axel Neuy, *An Examination of the β-Effect in an Addition Reaction with Different Ligands on Silicon*, XXII Organosilicon Symposium, Philidelphia, USA, April 1989, Abstract P-15.
7. Michael A. Brook, Elizabeth Jefferson and Thomas Sebastian, *Polytrihalosilylstyrenes: Exploiting the β-Effect for Polymer Synthesis*, 3rd North American Chemical Congress, June 1988, Toronto, Canada, Abstract ORGN-50.

6. Michael A. Brook and Christina H. Kremers, *Glycol-Silicones: Polymeric Organic Reagents?*, XXI Organosilicon Symposium, June 1988, Montreal, Canada, Abstract P-20.
5. Michael A. Brook, *Trihalosilylstyrenes: What happened to the α- and β-Effects*, 15th Annual Physical-Organic Minisymposium, Nov. 1987, Mississauga, Canada.
4. Michael A. Brook and Peter Hülser, *Silyl Triflates: Activators for Carbon-Carbon Bond Formation*, Chemical Institute of Canada Conference, Quebec, June 1987, Abstract ORG-42-D2.
3. Nick Henry Werstiuk, Michael A. Brook and Peter Hülser, *Thermolysis of Silyl Esters: An Ultraviolet Photoelectron Study*, 14th Annual Ontario-Quebec Physical Organic Minisymposium, Nov. 1986, Toronto.
2. Michael A. Brook and Dieter Seebach, *Stabilized Cyclic Nitronates: Intermediates for More Complex Heterocycles*, 10th International Congress of Heterocyclic Chemistry, August 1985, Waterloo, Canada, Abstract G-5-54.
1. T.H. Chan and Michael A. Brook, *Some Uses of Trimethylchlorosilane in Organic Synthesis, Chemical Institute of Canada Conference*, July 1982, Toronto, Abstract OR-18-7.

Invited Lectures: at Companies

39 Wacker Chemie, Burghausen Germany — Jan. 2006
Using Synthesis to Structure Interfaces: Making Silica and Silicones Biocompatible

38 Xerox (XRCC) — Feb. 2005
Learning from Nature: Morphological Control of Silica under Mild Conditions

37 Vistikon, Jacksonville Florida — Dec. 2004
Controlling biology at silicone interfaces: an integrated approach to ocular materials

36 AMO, Newport Beach, CA — March 2004
Controlling biology at silicone interfaces: an integrated approach to ocular materials

35 Specialty Minerals, Allentown, PA — March 2004
Protein-doped, controlled morphology silica monoliths and chelating silicones: Learning from nature

34 Air Products, Allentown, PA — March 2004
Protein-doped, controlled morphology silica monoliths: Learning from nature

33 QLT, Vancouver — March 2004
An Integrated Approach to New Ocular Materials

32 Novartis Cibavision, Atlanta Georgia — June 2003
Stabilizing Proteins in Silica and Silicones

31 Alcon, Fort Worth — June 2003
Stabilizing Proteins in Silica and Silicones

30 Dow Corning, Midland Michigan — Apr. 2002
Controlling Enzyme Stability in Water-in-Silicone Oil Emulsions

29 Genencor, Palo Alto — Aug. 2001
Silicone/protein interactions: Modifying hydrophobic/hydrophilic interactions to control both protein and interfacial stability

28 Sasol, Austin Texas — Aug. 2001

An Introduction to Silanes and Silicones
27 General Electric Corporate Research and Development, Waterford NY May 2001
Silicones at Biopolymers Interfaces: A Look at Beneficial and Not-So-Beneficial Fouling
26 NPS Pharmaceuticals Mar. 2001
Silicone:Protein Conjugates: Emulsions that Stabilize Proteins Against Denaturation
25 Alcon, Fort Worth, Texas Feb. 2001
Protein-Silicone Mixtures for Biological Cleaning Applications
24 Glaxo Canada Feb. 2001
Silicone:protein conjugates: emulsions that stabilize proteins against denaturation.
23 GE-Bayer, Leverkusen June 2000
Silicon at the Interface: New Surface Active Silanes and Silicones
22 Goldschmidt, Essen June 2000
Silicon at the Interface: New Surface Active Silanes and Silicones
21 Specialty Minerals, Allentown PA April 2000
Chelating Silicones
20 CK Witco Corp. (Sistersville WV) Dec. 1999
Looking for New Hydrophilic Substrates to Bind to Silicones
19 Michigan Molecular Institute, Midland MI Oct. 1999
Silicones at the Interface: What Do Biopolymers Offer
18 General Electric, Waterford Oct. 1999
Silicones at the Interface: The Benefits of Combining Silicones with Biopolymers
17 Unilever, Port Sunlight, UK Sept. 1998
Working with Silicones
16 National Starch, New Jersey June 1998
Confusing Nature: A Look at the Hydrophobization of Biopolymers Using Silanes and Silicones
15 Brantford Chemical Inc. Dec. 1997
Using Silicon Chemistry in Drug Delivery: Prodrugs Based on Modified Silica and Oral Protein Delivery Using Silicones
14 Unilever, UK, Dec. 1997
Surface Active Materials Based on Silanes, Silicones and Natural Polymers.
13 Dow Corning Corp. Sept. 1997
Silicone-Organic Copolymers the Natural Way: An Exploration of Silicone- and Silane-Modified Biopolymers
12 MacMillan Bloedel, Vancouver BC Sept. 1997
(Reversible) Modification of Biopolymers Using Silane, Silicone and Organic Coupling Agents.
11 Eastman Chemical, Kingsport, Tennessee Aug. 1997
Wood-Plastic Composites: A Role for Organosilane and Silicone Chemistry
10 Rhône Poulenc, Lyon, France Feb. 1997
Two Very Different Areas of Silicone Chemistry: Hydrosilsesquioxane-platinum catalysts and Silicone-biopolymer copolymers
9 General Electric, Schenectedy, NY Dec. 1996

Hard and soft siloxanes: hydrosilsequioxane: platinum catalysts and silicone: protein copolymers Sept. 1996

8 3M London, Ontario

Sticking to Biopolymers: Using the Concept of Functional Group Protection in Polymer Adhesion May 1996

Rhône Poulenc, Paris, France (2 lectures)

7 *Sterically Stabilized Silica Colloids*

6 *Silicone-Protein Copolymers*

5 Organon, Akzo, Oss, The Netherlands April 1993

Silicon as Mediator: Making the Drugs and Delivering Them to the Patient

4 Shell Research Amsterdam (KSLA) July 1990

3 Dow Corning Corporation (Midland, USA) April 1990

2 University of Toronto April 1988

1 Xerox Research Centre of Canada Sept. 1988

Invited Lectures: at Universities

81 Michael A. Brook, McMaster University Undergraduate Chemistry Society March 2006.

Fighting the Imposter Syndrome as a Chemist,

80 Universite de Montpellier, II, France Jan. 2006

La silicone et la silice dans une monde biologique: le contrôle de l'interface

79 Brock University, Chemistry Department Oct. 2004

Controlling protein stability in silicones and silica: Synthesis of new biomaterials

78 University of Waterloo, Chemistry Department Oct. 2004

Controlling protein stability in silicones and silica: Synthesis of new biomaterials

77 McMaster University, BIMR Summer Research Program Weekly Seminar Series, June 2004

Compatibilizing proteins with silica and silicones (what do graduate students actually do?)

76 Institute of Chemistry, Chinese Academy of Sciences, Beijing Nov. 2003

Using Silicone:Protein Interactions to Stabilize Water/Oil Interfaces and Protein Structure

75 Qingdao University of Technology Nov. 2003

Stereocontrol Using Silyl Groups: Enantioselective Reductions and Claisen Rearrangements

74 Huazhong University of Science and Technology Nov. 2003

Using Silicone:Protein Interactions to Stabilize Water/Oil Interfaces and Protein Structure

73 Wuhan University of Technology Nov. 2003

Protein-Doped Mesoporous Silica for Drug Screening Applications

72 Nanjing University Nov. 2003

Using Silicone:Protein Interactions to Stabilize Water/Oil Interfaces and Protein Structure

71 UWEB (University of Washington Engineered Biomaterials), Seattle, May 2003

Stabilizing Proteins in Silica and Silicones

70 Ian Wark Research Institute, University of South Australia, Adelaide, South Australia

Michael A. Brook, Frank LaRonde, Mustafa Mohamed and Forrest Li March 2003
Stereocontrol Using Silyl Groups: Enantioselective Reductions and Claisen Rearrangements

69 Ian Wark Research Institute, University of South Australia, Adelaide, South Australia
M. A. Brook, Dan Chen, Kui Guo, Zhang Zheng, John Brennan, and Paul Zelisko March 2003
Formation of Protein-Containing Controlled Pore Silica for Drug Discovery

68 Perspectives on Silicon (6 hours lectures during a 30 hour short course), Ian Wark Research Institute, University of South Australia, Adelaide, South Australia July 2002

67 Queensland University of Technology, Brisbane, Australia June 2002
Bringing Organic Chemistry to Silicon-based Interfaces

66 University of Sydney, Australia June 2002
The Passivation of Silica and Protein/Water Interfaces Using Silane Coupling Agents and Functional Silicones.

65 Flinders University, Adelaide, Australia June 2002
Stabilization of Water-in-Silicone Oil Emulsions: Surfactants Formed by the Interaction of Proteins/enzymes and Functionalized Silicones
Preparing and Passivating Silica: Matching Surface Chemistry to Application

64 University of South Australia, Adelaide, Australia June 2002
The Passivation of Silica and Protein/Water Interfaces Using Silane Coupling Agents and Functional Silicones.

63 McMaster University: Undergraduate Chemistry Series March 2002
From Oral Vaccines to Breast Implants: What Happens When Proteins Meet Silicones?

62 Ecole Nationale Supérieure, Lyon, France Feb. 2002
Protéines chez soi: Dans les silicones et dans la silice (New homes for proteins in silicones and silica)

61 University of Dresden, Germany, Institute of Polymer Research Feb. 2002
The passivation of silica and silicone surfaces using silane coupling agents and proteins.

60 University of Toronto Feb. 2001
Silicone/protein interactions: Modifying hydrophobic/hydrophilic interactions to control both protein and interfacial stability

59 University of Windsor Sept. 2000
Exploiting Extracoordinate Silicon: Enantioselective Reductions and Aldol Reactions Catalyzed by Chiral Amines (and some Silicone-Protein Stuff)

58 Institut National des Sciences Appliquées de Lyon July 2000
Silicium à l'Interface: Silanes et Silicones Fonctionnalisés

57 Institut Charles Sadron, Université Louis Pasteur June 2000
Silicium à l'Interface: Silanes et Silicones Fonctionnalisés

56 Universite de Bordeaux I May 2000
Combining Silicones and Biopolymers: Controlling the Interface (en français)

55 Ecole Normale Supérieure de Lyon May 2000
Silicium à l'Interface: Silanes et Silicones Fonctionnalisés

54 University of Twente May 2000

Silicon at the Interface: New Surface Active Silanes and Silicones May 2000
53 University of Amsterdam
Exploiting Extracoordinate Silicone: Enantioselective Reductions and Aldol Reactions Catalyzed by Chiral Amines June 1999
52 Kyoto University
Chiral Extracoordinate Hydrosilanes Derived from Bidentate Ligands: Enantioselective Reduction of Ketones June 1999
51 Kyoto Institute of Chemistry
Gifts From Nature: New Materials From Silicones and Biopolymers May 1999
50 Chinese University of Hong Kong
Gifts From Nature: New Materials From Silicones and Biopolymers May 1999
49 University of Hong Kong
Chiral Extracoordinate Silanes: Catalytic and Enantioselective Reduction May 1999
48 Hong Kong University of Science and Technology
Chiral Extracoordinate Silanes Derived From Histidine: Catalytic and Enantioselective Reduction March 1999
47 McMaster University President's Stewardship "Over the Ivy Wall"
Confusing Nature: What does Lemon Pledge have to do with Oral Vaccines? Feb. 1999
46 Chemical Engineering, McMaster University
Confusing Nature: A Look at the Hydrophobization of Biopolymers Using Silanes and Silicones Feb. 1999
45 Brock University
Stereoselective Reduction of Ketones by Histidine: Alkoxysilane Complexes Nov. 1998
44 Mount Allison University
Confusing Nature: A Look at the Hydrophobization of Biopolymers Using Silanes and Silicones Nov. 1998
43 University of New Brunswick
Confusing Nature: A Look at the Hydrophobization of Biopolymers Using Silanes and Silicones Nov. 1998
42 Acadia University
Confusing Nature: A Look at the Hydrophobization of Biopolymers Using Silanes and Silicones Nov. 1998
41 Dalhousie University
Confusing Nature: A Look at the Hydrophobization of Biopolymers Using Silanes and Silicones Oct. 1998
40 McMaster University Board of Governers
Combining Silicones and Biopolymers: New Materials Feb. 1998
39 Telemark University, Porsgrunn, Norway
Silicone Degradation Mechanisms Dec. 1997
38 Swedish Institute for Pulp and Paper, Stockholm and Swedish Institute For Surface Science, Stockholm
Silane and Silicone Coupling Agent Chemistry: Are Biopolymer Surfaces Like Siliceous Surfaces? Oct. 1997
37 University of Toronto, Faculty of Pharmacy,

Using Silicon Chemistry in Drug Delivery: Prodrugs Based on Modified Silica and Oral Protein Delivery Using Silicones
36 University of British Columbia Sept. 1997
Modifying Biopolymers with Silanes and Silicones
35 Brockhouse Institute for Materials Science, McMaster University Jan. 1997
Hard and soft siloxanes: hydrosilsequioxane: platinum catalysts and silicone: protein copolymers
34 McMaster Undergraduate Chemistry Club Nov. 1996
Silicon in Biology
Organosilanes as Protecting Groups: Different Approaches to the Stabilization of Small Molecules, Polymers, Transition Metals and Surfaces
Université Paul Sabatier, Toulouse, France (3 lectures) June 1996
33 *Organosilanes in an Inorganic World and Inorganic Silicon in an Organic World*
32 *What Happens When Silicon Meets Biology*
31 *Stabilized Group 14 Cations*
Université de Bordeaux I, France, (3 lectures) May 1996
30 Universidad del Pais Vasco, San Sebastian, Spain June 1996
29 *Organosilanes in an Inorganic World and Inorganic Silicon in an Organic World*
28 *What Happens When Silicon Meets Biology*
27 *Stabilized Group 14 Cations*
26 Landbouw Universiteit Wageningen, Wageningen, Netherlands May 1996
Silicones at the Interface: Starch/Protein/Silicone Microparticles as Oral Vaccines
25 Université de Namur, Belgium May 1996
Stabilizing β-Cations and Protecting Transition Metals with Silicon
24 Rijks Universiteit Utrecht June 1995
Controlled Modification of Silica Surfaces: Polyolefin and Silicone Sterically Stabilized Silica Colloids
23 Queen's University Sept. 1994
Silicone at the Interface: What happens when it's found in unusual places
22 McMaster University Oct. 1993
Silicon Mediated Cope-type Cyclizations OR After one year in the Netherlands, what does Fokkje (fok-ya) really mean?
21 University of Western Ontario Sept. 1993
Silicon Mediated Cope-type Cyclizations
20 University of Montpellier May 1993
Silicon Bearing Electron Withdrawing Groups: Exploiting the Differences
19 University of Toulouse May 1993
Silicon Bearing Electron Withdrawing Groups: Exploiting the Differences
18 University of Bordeaux May 1993
Silicon as Mediator: Making the Drugs and Delivering Them to the Patient
17 Free University of Amsterdam March 1993
Silicon Bearing Electron Withdrawing Groups: Exploiting the Differences
16 Open University, Milton Keynes, England March 1993
A Silicon Transplant: From the β-effect to Polymers (focus on silicon extracoordination)

15 University of Sussex March 1993
A Silicon Transplant: From the β-effect to Polymers (focus on silicon hyperconjugation)
14 University of Utrecht: Feb. 1993
Silicon Bearing Electron Withdrawing Groups: Exploiting the Differences
13 University of Groningen Feb. 1993
Silicon Bearing Electron Withdrawing Groups: Exploiting the Differences
12 University of Amsterdam Jan. 1993
A Silicon Transplant: From the β-effect to Polymers (focus on synthesis)
11 Technische Hochschule Darmstadt Jan. 1993
A Silicon Transplant: From the β-effect to Polymers (focus on β-effect)
10 Universität Kaiserslautern Jan. 1993
A Silicon Transplant: From the β-effect to Polymers (focus on silicon hyperconjugation)
9 ETH-Zürich (Seebach Group Meeting) Feb. 1993
A Silicon Transplant: From the β-effect to Polymers
Centre of Advanced Scientific Investigation (CINVESTAV) Mexico City, (2 lectures) March 1992
8 *Polymeric Materials Derived from the β-Effect*
7 *The β-effect: Modifying the Ligands on Silicon*
6 Guelph University March 1992
A Silicon Transplant: From the β-effect to Polymers
5 SUNY Binghampton (New York) March 1991
4 Universiteit van Amsterdam July 1990
3 McMaster University (Peacock Lecture Series) Oct. 1989
2 University of Western Ontario Oct. 1988
1 Université de Montréal Dec. 1988

Courses Taught

2005-06		**Approximate Enrolment**
Chem 756	Silicon Chemistry	8
Chem 2OA3	Organic Synthesis	380
Total enrolment is about 650 – 2 sections		
Chem 4PP3	Polymer Chemistry	22

2004-05		**Approximate Enrolment**
Killam Research Fellowship (until Jan. 2005)		
Chem 4G06	(Course coordinator)	15
Research supervisor 1		
Chem 1AA3		350

2003-04	**Approximate Enrolment**

Killam Research Fellowship
Chem 4G06 (Course co-coordinator) 22
Research supervisor
2

		Approximate
2002-03		
Enrolment		
Chem 760	Organic Synthesis	8
Chem 2BA3	Organic Synthesis	42
Chem 4G06	(Course coordinator)	8
(on Killam Fellowship starting Jan. 2003)		
2001-02		**Approximate**
Enrolment		
Chem 2L03	Organic Laboratory	42
Chem 2BA3	Organic Synthesis	42
Chem 1AA3	Introductory Chemistry (3 units)	225
2000-01		**Approximate**
Enrolment		
Chem 760	Organic Synthesis	8
Chem 756	Organosilicon Chemistry	6
Chem 2L03	Organic Laboratory	18
Chem 4G6	Supervisor, Undergraduate Thesis	1
Chem 2BA3	Organic Synthesis	18
Chem 1AA3	Introductory Chemistry (3 units)	275
1999-2000	**On sabbatical**	
Chem 4G6	Supervisor, Undergraduate Thesis	2
1998-99		
Chem 760	Organic Synthesis	4
Chem 4G6	Supervisor, Undergraduate Thesis	2.5
Chem 4D3	Organic Synthesis	16
Chem 1AA3	Introductory Chemistry (3 units)	400
1997-98		
Chem 730a	Organic Synthesis	7
Chem 4G6	Supervisor, Undergraduate Thesis	2
Chem 4D3	Organic Synthesis	7
Chem 1AA3	Introductory Chemistry (3 units)	400
1996-97		
Chem 730a	Organic Synthesis	7
Chem 4G6	Supervisor, Undergraduate Thesis	2

Chem 4D3	Organic Synthesis	19
Chem 1AA3	Introductory Chemistry (3 units)	400
1995-96		
Chem 731c	Organosilicon Chemistry	10
Chem 4G6	Supervisor, Undergraduate Thesis	3
Chem 4D3	Organic Synthesis	12
Chem 1AA3	Introductory Chemistry (3 units)	400
TSM 4A2	Theme School on New Materials (2 units, Overload), Seminar Course	25
1994-95		
Chem 730a	Organic Synthesis	12
Chem 4G6	Supervisor, Undergraduate Thesis	2
Chem 4D3	Organic Synthesis	12
Chem 1A6	Introductory Chemistry (3 units)	400
1993-94		
Chem720a, 721	Molecular Modelling -	1
a special double module offered to a Masters of Teaching student, overload (unpaid)		
Chem 730a	Organic Synthesis	12
Chem 731c	Organosilicon Chemistry, Overload	10
Chem 1A6	Introductory Chemistry (3 units)	400
Chem 4G6	Supervisor, Undergraduate Thesis	3
Chem 4D3	Organic Synthesis	15
1992-93 (University of Amsterdam, sabbatical leave)		
Graduate Course	Fundamentals of Organosilicon Chemistry	6
1991-92		
Chem 4G6	Supervisor, Undergraduate Thesis	2
Chem 730d	Transition Metals/Organic Synthesis	8
Chem 2D3	Organic Chemistry, Overload	125
Chem 3D3	Organic Chemistry	40
1990-91		
Chem 4G6	Supervisor, Undergraduate Thesis	2
Chem 730a	Organic Synthesis	12
Chem 2D3	Organic Chemistry, Overload	125
Chem 721	Organic Colloquium (Organizer)	20
Chem 3D3	Organic Chemistry	40
1989-90		
Chem 4G6	Supervisor, Undergraduate Thesis	2
Chem 721	Organic Colloquium (Organizer)	20

Chem 3D3	Organic Chemistry	50
Chem 731c	Organosilicon Chemistry	40
1988-89		
Chem 4G6	Supervisor, Undergraduate Thesis	2
Chem 720b	Molecular modelling	10
Chem 3D3	Organic Chemistry	40
1987-88		
Chem 4G6	Supervisor, Undergraduate Thesis	2
Chem 720a	Computers in organic chemistry	12
Chem 730a	Synthesis	12
1986-88		
Chem 206	Polymer Section	35
1986-87		
Chem 705	Computers in organic chemistry	12
Chem 4G6	Supervisor, Undergraduate Thesis	2
1985-86		
Chem 208	Polymer Section	35
Chem 705	Synthesis, 4 lectures	20
Chem 4G6	Supervisor, Undergraduate Thesis	1

Thesis Committees

External Referee

Student	Supervisor	Institution	Degree	Year
Alexandra Bartole	Dr. I. Manners	University of Toronto	Ph.D.	2005
Jessie Zhang	Dr. R. Kluger	University of Toronto	Ph.D.	2005
Nicola Lake	Dr. J. Ralston	Ian Wark Institute, University of South Australia, Adelaide	Ph.D.	2004
Claire Minard-Basquin	Dr. C. Chaix Dr. C. Pichot	École Normale Supérieure Lyon	Ph.D.	2000
Sandjeevi-Ranganathan, S.	Dr. R. Whitney, Dr. W. Baker	Queen's University	Ph.D.	1998
Matuana-Molanda, L.	Dr. J. Balatinecz	University of Toronto	Ph.D.	1997

Vlad, F.-I. 1997	Dr. A. Rudin	University of Waterloo	Ph.D.
Jihai Ma 1996	Dr. T. Tidwell	University of Toronto	Ph.D.
Andrea Dalacu 1994	Dr. M. F. Richardson	Brock University	M.Sc.
Umesh R. Parshotam 1993	Dr. Kim Baines	University of Western Ontario	Ph.D.
Flores Rutjes 1993	Dr. Henk Hiemstra	Universiteit van Amsterdam	Ph.D.
Lucy Lolkema 1993	Prof. Nico Speckamp Dr. Henk Hiemstra	Universiteit van Amsterdam	Ph.D.
Wim Jan Koot 1993	Prof. Nico Speckamp Dr. Henk Hiemstra	Universiteit van Amsterdam	Ph.D.
Louis Plamondon 1988	Prof. Nico Speckamp Dr. J. Wuest	Université de Montréal	Ph.D.
Peter Tai Wah Cheng 1988	Dr. S. MacLean	University of Toronto	Ph.D.

McMaster

Student	Supervisor	Degree	Year
Greg Bahun	Dr. A. Adronov	Ph.D	
Xiangchun Yin	Dr. H. Stover	Ph.D.	
Tina Guenther	Dr. J. Valliant	Ph.D.	
Adrienne Pedrich	Dr. P. Harrison	Ph.D.	
John Kaldis	Dr. M. J. McGlinchey	Ph.D.	
Ju Zhang	Dr. R. H. Pelton	Ph.D.	
Rahime Benhabbour	Dr. A. Adronov	Ph.D	
Sreedhar Cheekoori	Dr. J. McNulty	M.Sc.	
Ken Rilling 2005	Dr. J.M. Dickson	Ph.D.	
Travis Besanger 2005	Dr. J. Brennan	Ph.D.	
Yaling Xu 2005	Dr. R. H. Pelton	Ph.D.	
Sanela Martic 2005	Dr. M. Brook	M.Sc.	
An Investigative Study Of Silicon-Based Materials as Alternative Matrices for Maldi-TOF Applications			
X. Sui 2005	Dr. J. D. Brennan	M.Sc.	

Bola Sogbein 2005	Dr. John Valliant	Ph.D.
Ilena Dumbrava 2005	Dr. W. Leigh	M.Sc.
Amro Ragheb 2005	Dr. M. A. Brook	Ph.D.
Controlling Protein-Silicone Interactions by the Modification of Silicone Elastomers with Poly(ethylene oxide)		
Paul Zelisko 2004	Dr. M. A. Brook	Ph.D.
The interaction of proteins with functionalized silicones		
Masaaki Amako 2004	Dr. M. A. Brook	Ph.D.
Synergy of Polydimethylsiloxanes and Late Transition Metal Complexes		
Tom Owens 2004	Dr. W. J. Leigh	Ph.D.
Jiahong Tan 2004	Dr. J. Brash	Ph.D.
Jacques Archambeault 2002	Dr. J. Brash	Ph.D.
Maggie Wang 2002	Dr. R. F. Childs	M.Sc.
Guodong Zheng 2002	Dr. H. D. H. Stover	Ph.D.
Xioashong Lu 2001	Dr. J. Warkentin	Ph.D.
Mustafa Mohamed 2001	Dr. M. A. Brook	Ph.D.
Sonya Balduzzi 2001	Dr. Michael Brook	Ph.D.
Reactive Silyl Protecting Groups		
Brandi Meeks 2001	Dr. H. Shcardown	M.Sc.
Ahmed Alzamly withdrawn	Dr. M. A. Brook	Ph.D.-
Frank J. LaRonde 2000	Dr. M. A. Brook	Ph.D.
C_2-symmetric ligands		
Sudarshi Regismond 2000	Dr. F. Winnik	Ph.D.
Rodica Stan 1999	Dr. Michael Brook	Ph.D.
Synthesis of Novel Silicones and Silanes for Interface Control		
Vasiliki Bartzoka 1999	Dr. Michael Brook	Ph.D.

Silicone Protein Interactions Mark Stradiotto 1999	Dr. Michael Brook (co-supervised with with M. J. McGlinchey)	Ph.D.
The Dynamics and Reactivity of η^1-Indenyl Complexes Christine Braderic 1998	Dr. W.J. Leigh	Ph.D.
Karen Moffat 1998	Dr. H. Stöver	Ph.D.
Suzie Rigby 1997	Dr. M. McGlinchey	Ph.D.
Stephen Urquhart 1997	Dr. A. Hitchcock	Ph.D.
Paul Charpentier *Metallocene-catalyzed semi-batch and continuous polymerization of ethylene* 1997	Dr. A. Hamielec Dr. M. A. Brook	Ph.D.
Ralph Ruffolo *Silanes and Allylsilanes as Possible Precursors for Transition Metal Metal-stabilized Silylium Ions* 1997	Dr. M. A. Brook Dr. M.J. McGlinchey	Ph.D.
Howard Ketelson 1996	Dr. M. A. Brook Dr. R. H. Pelton	Ph.D.
The Colloidal Stability and Surface Chemistry of Stöber Silica David Valentini 1996	Dr. M. A. Brook	M.Sc.
Silicon-Modified Starch Composites Courtney Henry 1994	Dr. M. A. Brook	Ph.D.
Exploring the Synthetic Utility of Vinyldichlorosilanes and Vinylarylsilanes Graham McGibbon 1994	Dr. J. K Terlouw	Ph.D.
Tom Stefanac 1994	Dr. M. A. Brook	M.Sc.
Silane Based Radical Polymerization: Functionalized Homopolymers and Copolymers Mike Roth 1994	Dr. M. A. Brook	M.Sc.
Controlled Formation of New Si-based Materials Sengen Sun 1994	Dr. P. Harrison	Ph.D.

Kai Li 1994	Dr. H. D. H. Stöver	Ph.D.
Carol Dallaire 1992	Dr. M. A. Brook	Ph.D.
Study of 1-Methylated-2-trimethylsilyl Cations: An Examination of the β-Effect for Silyl, Germyl and Stannyl Groups		
Andrea Osterroth 1991	Dr. M. A. Brook Dr. R.H. Pelton	M.Sc.
Poly(methyl methacrylate) Sterically Stabilized by Silicone		
Weifeng Yu 1991	Dr. M. A. Brook	M.Sc.
The Roles of Ligands on Silicon		
Thomas Sebastian 1990	Dr. M. A. Brook	M.Sc.
Trichlorosilylstyrene Oligomers		
Defense Only		
Ed Ng 2005	Dr. H. Jain, Business	Ph.D.
Young-Min Kim 2005	Dr. J. MacGregor, Chem. Eng.	Ph.D.
Damian Jankowicz (Chair) 2004	Dr. S. Becker, Psychology	Ph. D.
Michelle Vosburgh (Chair) 2004	Dr. J. Weaver, History	Ph. D.
Beata Gajewski (Chair) 2004	Dr. M. Jordana, Medical Sciences	Ph.D.
Tim Jacobs (Chair) 2003	Dr. J. Ferns, English	Ph.D.
Lina Liu 2003	Dr. H. Sheardown, Chem. Eng.	M.Sc.
Abhaya Kulkarni 2003	Dr. M. Boyle	Ph.D.
Millman, J. (Chair) 2003	Dr. D. Andrews	Ph.D.
Pauli Kavalakatt M.Sc.	Dr. H. D. H. Stöver, Chem. 2002	
Youqing Shen 2001	Dr. S. Zhu, Chem. Eng.	Ph.D.
Nekmohamed Manji Ph.D.	Dr. C. Nahmias, Med. Phys. 2001	
Linda Li M.Sc.	Dr. R. Pelton, Chem. Eng. 2001	

Iva Matkovic 2001	Dr. K. Dunbabin, History	Ph.D.
Bruce Wilson 2001	Dr. B. Baetz, Civil Eng.	Ph.D.
Brandi Meeks 2001	Dr. H. Sheardown, Chem. Eng.	M.Sc.
Leslie Ritchie 2000	English	Ph.D.
Stevens, Ronald (Chair) 2000	Dr. Weitz, Med. Sci.	Ph.D.
Downey, Jeff 2000	Dr. H. Stöver,	Ph.D.
Martin, W. 1999	Dr. A. Hrymak	M.Sc.
MacKay, Geoff (Chair) 1999	Dr. G. Wright,	Ph.D.
Arida, F. (Chair) 1998	Dr. M. Elbastawi, Mech. Eng.	Ph.D.
Marriott, Michael (Chair) Ph.D.	Dr. B. Milliken, Psychology 1998	
Wu Chen, Iris (Chair) 1998	Dr. M. Blajchman, Medical Sciences	Ph.D.
Barker, S. 1997	Dr. G. Purdy, Mat. Sci. & Eng.	Ph.D.
Wauben, I. 1997	Dr. S. Atkinson, Nutrition	Ph.D.
Marc Webster 1996	Dr. Muller, Biology	Ph.D.
Hua Guo 1995	Dr. A. Hamielec	Ph.D.
Hui Teng Er 1995	Dr. J. Warkentin	M.Sc.
Naomi Laing Ph.D.	Dr. W. Chan, Biochemistry 1994	
Darryl Scott Pickering 1992	Dr. L. P. Niles, Neurosciences	Ph.D.
Greg Sluggett 1993	Dr. W. J. Leigh	Ph.D.
Nien Nguyen 1991	Dr. W. J. Leigh	M.Sc.
William Mills 1990	Dr. B. E. McCarry	M.Sc.
J. Paul Santerre 1990	Dr. J. Brash, Chemical Engineering	Ph.D.

Charles Younger 1990	Dr. R.A. Bell	M.Sc.
William Gunn withdrawn	Dr. N.H. Werstiuk	Ph.D.
Lynn M. Cameron 1990	Dr. D.B. MacLean	M.Sc.
Michel B.M. Mangion 1990	Dr. G.P. Johari, Materials Science	Ph.D.
Richard Perrier 1989	Dr. M. J. McGlinchey	Ph.D.
J. Douglas McCallion 1986	Dr. J. Warkentin	M.Sc.

Committee and Association Activity

McMaster Committees	**Position**	**Year**
Dean's Advisory Committee	Member	2005
Science/Engineering Promotion/Tenure Committee	Member	2005-2008
Teaching and Learning Grants Assessment Committee	Member	2005
Intellectual Property Board	Member	1998-2003
Selection Committee, Associate Dean of Science	Member	2002
Faculty of Science Undergraduate Curriculum and Calendar	Member	1998, 2000-01
Health Sciences Admissions Committee	Member	1998
McMaster Patent Board	Member	1996-98
President's Task Force on Support of Research at McMaster	Member	1996
Selection Committee, Dean of Science	Member	1995
Dean's Advisory Committee on Computing	Member	1994-96
Faculty Health Sciences Graduate Admissions/Study Committee	Member	1995-98
Graduate Curriculum and Policy Committee	Member	1994-7
Salary Anomaly Adjustment Committee Faculty of Science	Member	1991
Graduate Reviewing Committee Faculty of Science	Member	1990-92
Hiring Committee, CIS Science Coordinator	Member	1989
Ad Hoc Committee on Research and Senior Undergraduate Computing Research Needs	Member	1989
McMaster-IBM Cooperative Project	Member	1988-89
Departmental Committees		
Departmental Advisory Committee	Member	2005-2006
Nanomaterials Committee (CFI)	CoChair	2005
Undergraduate Reviewing Committee	Member	2005-06
Implementation of CHEM3LI3	Member	2003

Departmental Advisory Committee	Member	2001-
2002		
Computing Facility Committee	Member	2001-
2002		
Accreditation Committee	CoChair	2001-
2002		
Undergraduate Curriculum and Calendar Committee	Chair	2000-02
Freshman Committee	Member	2000-01
Graduate Curriculum Committee	Member	2000-01
Undergraduate Curriculum and Calendar Committee	Chair	1998
Year One Frosh Week (gave lecture)		1998
Chemistry Computer Committee	Member	1998
Organic Comprehensives Coordinator	Chair	1996-98
Teaching Associates Coordinator	Chair	1996-97
Chemistry Chair Selection Committee	Member	1995
Departmental Advisory/P&T Committee	Member	1994-96
Departmental Seminars	Chair	1993-96
X-ray Facility Users Committee	Member	1993-94
Graduate Curriculum Committee	Member	1993-94
Comprehensive Exam Coordinator	Chair	1992
Facilities Committee	Member	1991-92
Departmental Advisory Committee	Member	1989-93
Departmental Computer Users Committee	Member	1991
X-ray Facility Users Committee	Member	1991-92
Selection of X-Ray Facility Manager	Member	1990-91
Graduate Recruiting	Chair	1987-90
Graduate Reviewing	Chair	1987-92
IBM Submission for Masters in Computer Chemistry	Member	1986-88
Graduate Curriculum	Member	1986-87
Undergraduate CIC Student Advisor	Chair	1986-88
Chemistry Club Faculty Advisor	Chair	1986-87
Safety Committee	Member	1985-86
Facilities Committee	Member	1985-87

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